TESTIMONY OF RANDY H. ERSKINE

OF

THE PUBLIC SERVICE COMMISSION OF SOUTH CAROLINA

DOCKET NO. 94-006-E

IN RE: DUKE POWER COMPANY

Q. WOULD YOU PLEASE STATE YOUR NAME, ADDRESS AND OCCUPATION?

A. Randy H. Erskine, 111 Doctors Circle, Columbia, South Carolina. I am employed by the Public Service Commission of South Carolina as a Utilities Engineer Associate II.

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I received a Bachelor of Science Degree in Electrical Engineering Technology from Clemson University in 1982. I was employed by this Commission in November 1982 as a Utilities Engineer Associate I in the Electric Department and have been in my present position since March 1985. I have attended professional seminars relating to Electric Utility Rate Design. I have testified before this Commission in conjunction with complaint, fuel clause and general rate hearings.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to provide the results of Staff's review of the Company's plant operations at the McGuire and Catawba Nuclear Stations for the period April 1, 1994 through September 30, 1994.

Q. WOULD YOU PLEASE GIVE THE RESULTS OF YOUR REVIEW OF THE PLANT PERFORMANCE AT THE MCGUIRE STATION DURING THE PERIOD APRIL 1, 1994 THROUGH SEPTEMBER 30, 1994?

A. Yes, McGuire Unit No. 1 began a scheduled 52 day refueling on August 19, 1994 and continuing through the end of September 1994. As in prior, similar situations, Staff requests this refueling be reviewed in the context of Duke Power Company's next fuel proceeding.

During the review period, McGuire Unit No. 1 experienced one brief forced outage beginning on May 12, 1994 and ending on May 13, 1994. Personnel, while performing preventive maintenance on ground detection equipment, placed a screwdriver on a divider barrier. The screwdriver later fell and struck a reverse power trip relay resulting in a reactor trip. This outage was the result of improper use of equipment because the divider

barrier in an electrical panel was used as a tool rest. Corrective actions to be taken to prevent recurrence include communicating to personnel that divider barriers in electrical equipment are not to be used as tool rest and procedure changes to caution personnel.

McGuire Unit No. 2 did not experience any outages, during the review period.

Q. MR. ERSKINE, WOULD YOU PLEASE GIVE THE RESULTS OF YOUR REVIEW OF THE REFUELING OUTAGE AT CATAWBA UNIT 2 WHICH BEGAN APRIL 29, 1994 AND ENDED ON JULY 5, 1994?

A. Catawba Unit 2 entered a refueling outage on April 29, 1994 and ended on July 5, 1994. This refueling outage lasted for approximately 65 days. The refueling outage had a planned duration of 59 days. The outage was extended due to Reactor Coolant Pump Seal Repair. During the Unit 2 refueling, two of the four reactor coolant pumps' seals were rebuilt. During the initial pressurization of the Reactor Coolant System, the number 2 seal in the B reactor coolant pump exhibited excessive leakoff flow, indicating that it was not seating properly. The cause of the number 2 seal failure to seat was determined to be the misalignment of the seal runner

anti-rotation pin with the seal housing. The misalignment apparently occurred during final installation of the number 2 seal and would have been undetectable until pressurization. The reactor coolant seal package was inspected and replaced. In spite of all the challenges, this outage was the third shortest duration in the history of Catawba.

Q. MR. ERSKINE, WOULD YOU PLEASE GIVE THE RESULTS OF YOUR REVIEW OF THE PLANT PERFORMANCE AT THE CATAWBA STATION DURING THE APRIL 1, 1994 THROUGH SEPTEMBER 30, 1994?

A. Catawba Unit No. 1 did not experience any forced outages, during the review period.

Catawba Unit No. 2 experienced three forced outages during the period under review. The first outage began on July 10, 1994 and ended on July 11, 1994. On July 10, personnel were attempting to improve a high thrust bearing temperature condition on the "A" main feedwater pump. The thrust bearing temperature continued to increase. In order to prevent equipment damage, control room operators manually tripped the "A" main feedwater pump. An automatic runback was initiated as a result of the trip of one of the two main feedwater pumps. During the runback, the "C" steam generator reached the

high-high level setpoint which results in a main turbine trip and feedwater isolation to prevent moisture intrusion into the main turbine. The feedwater isolation tripped the operating "B" main feedwater pump. With reactor power at approximately 55 percent, the operators manually tripped the reactor. This outage was reviewed and determined to be the result of inadequate maintenance performed on the main feedwater pump lube oil system, combined with management decisions which allowed the unit to be returned to full power operations with main feedwater pump thrust bearing operating temperature continuing to elevate. Had the unit been at less than full power, increased margin in the ability of the Digital Feedwater Control System to control steam generator levels would have been realized.

The second outage at Catawba Unit No. 2 began on August 30, 1994 and ended on August 31, 1994. Personnel were investigating the cause of the Reactor Trip/Safety Injection events recorder point being in alarm. As part of investigating the cause of the alarm a maintenance technician determined from a drawing that it would be necessary to open a sliding link. When the link was opened, a reactor trip occurred. Subsequent investigation revealed

that the wrong link was opened due to being incorrectly identified on the drawing. The link as shown on the drawing used by the technician should have been in the Reactor Trip/Safety Injection events recorder point circuitry; however, it was actually in the Manual Safety Injection/Reactor Trip circuitry. This outage was reviewed and determined to be the result of less than adequate work practices in that self-checking was not properly applied because the error was not recognized during earlier revision to the drawing. Corrective actions include revising the drawing, changes to the engineering guideline for checking drawings, and evaluation of the troubleshooting process.

The third forced outage experienced by Catawba Unit No. 2 during the period under review began on September 13, 1994 and ended on September 16, 1994. An automatic Reactor/Turbine Trip occurred after the Main Steam Isolation Valve for "C" Steam Generator closed unexpectedly. This outage was the result of equipment failure involving an Auxiliary Relay.

SUMMARY

Q. MR. ERSKINE, IN YOUR REVIEW OF THE COMPANY'S PLANT OPERATIONS, HAVE YOU DETERMINED WHETHER ANY SITUATIONS WARRANT A DETERMINATION THAT ANY COMPANY ACTION CAUSED ITS CUSTOMERS TO BE SUBJECT TO PAYING

HIGHER FUEL COSTS?

A. Based on my review of the Company's plant operations at the McGuire and Catawba Nuclear Stations, I have determined that there were no Company actions which required Duke's customers to incur higher fuel costs. Therefore, based on my review I have not recommended any disallowance of fuel cost during this review period.

Q. MR. ERSKINE, DOES THIS COMPLETE YOUR TESTIMONY?

A. Yes, it does.